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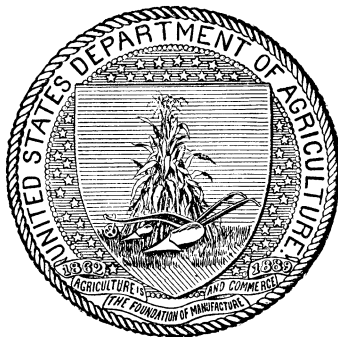
FARMERS' BULLETIN No. 177.

SQUAB RAISING.

[Revised May, 1904.]

BY

WILLIAM E. RICE.



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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 19, 1904.

SIR: I transmit herewith copy for a revised edition of Farmers' Bulletin No. 177, the title of which is Squab Raising, prepared by Mr. William E. Rice, of New Jersey, a practical poultry breeder who has been especially successful with pigeons. His experience and method of presenting the subject are explained in the following statement from a letter accompanying the original manuscript:

For the past twenty-five years I have been interested in breeding poultry, but during the last ten years my attention has been directed to keeping pigeons for squab growing.

There is money in this industry if intelligently managed, but the breeder must know how to begin, and how to proceed after a beginning has been made. I have studied the question in all its phases in my own pens, have read every book I could find, and have fought my way up through all the drawbacks and difficulties of the business.

At one time for financial reasons I disposed of my flock and buildings. About five years ago I started again with a single pair of birds, buying a few from time to time until a small but well-selected flock was obtained. This flock has paid all expenses of every kind, the bills for erecting two new houses at a cost of \$250 each, and the wages of a man two days in each week to dress squabs and clean out the houses; and to-day I have a fine flock of 600 pairs of as good birds as it is possible to secure, everything paid for, and the birds in good, healthy condition, and yielding a fair weekly income.

I have treated the question of squab raising from a practical standpoint only, drawing largely from personal experience. I have found some very rough places along the road to success, and I have tried to so describe my experience that others who are facing the same difficulties may be helped, and those who desire to enter the business have a safe guide.

Considerable new matter has been inserted in this edition in which the author discusses chilled eggs and dead squabs, the causes and remedies, and offers some suggestions regarding the purchase of breeding stock.

Respectfully,

D. E. SALMON,
Chief of Bureau.

Hon. JAMES WILSON,
Secretary of Agriculture.

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SQUAB RAISING.

BUILDINGS.

THE SITE.

In selecting a site for the home of pigeons, as much care and judgment should be exercised as in choosing the location of one's own home. An unhealthy location for man would most likely prove unhealthy for the birds. A damp place, or one exposed to extremes of heat, cold, or wind, is to be rejected. The spot selected should be well drained, should be facing the south or east, should be free from obstructions which shut out the rays of the morning sun, and be sheltered either by trees or buildings from the north and west winds. Such a place, with a shallow stream of pure running water for drinking and bathing—so essential to the health of pigeons—will be an ideal site, and will require a minimum of expense and daily work in caring for the stock. Of course such sites can only be obtained in the country.

THE HOUSE.

Size and capacity.—The house is as important as the site. Some successful breeders prefer single houses holding not more than 50 pairs of birds; but 5 of these single houses will cost considerably more to build than 1 house of 5 sections accommodating 50 pairs in each section, and giving the same capacity as the 5 single houses. Again, feeding and other daily attentions to the flock require less time and labor in 1 large house than in 5 separate smaller houses. In stormy weather and in time of snow banks, this increased labor for separate houses is quite an item.

In no case should a house be built for more than 250 pairs, nor more than 50 pairs be kept in each section. It must be so designed as to be well ventilated and easily kept clean, secure from attacks of mice, rats, and other animals, and not subject to drafts of air.

The houses last built by the writer (fig. 1), the form of which is recommended, are 40 feet long and 12 feet wide, with 6 posts on each side, and 9 feet high to peak of roof. Along the north side a passageway (fig. 2) 3 feet wide runs the full length, the rest of the space being divided by 4 partitions into 5 equal pens. These pens are sepa-

rated from the passageway by wire netting, reaching from the floor to the roof, with a door into each pen. If the pigeon raiser has but one house he should either use one of these compartments as a room for storing feed and other supplies, picking squabs, etc., or add 10 feet to the length of the building for such purposes.

Light and ventilation.—These are provided for as follows: Each gable near the peak has a 4-light window. The south side has a window with two 6-light sashes in each section, and the north side two 6-light windows. All the windows slide so they can be opened to any extent desired, and they are all covered with wire netting on the outside to prevent the escape of the birds.

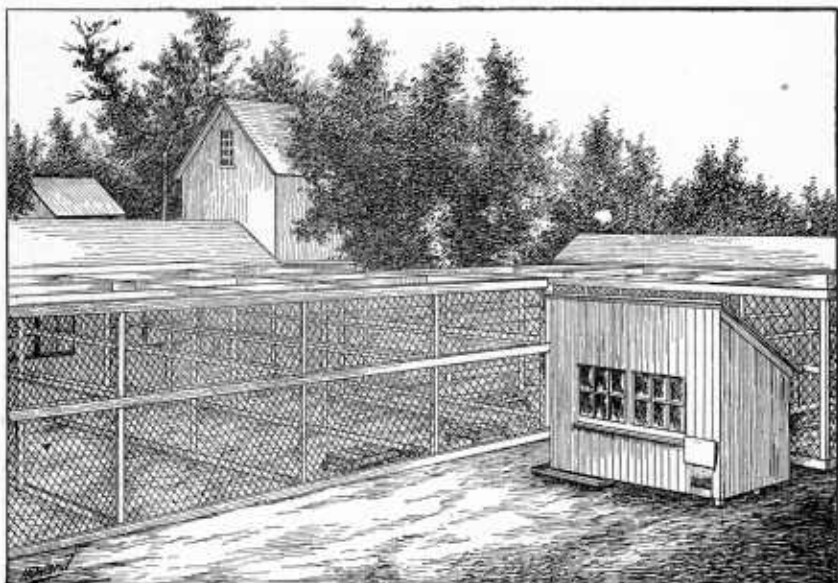


FIG. 1.—General view of pigeon house, fly, and other buildings.

Ventilation is secured by closing the doors or windows against which the wind may be blowing and opening those on the opposite side to the extent which may be necessary.

Each partition contains an opening (covered with netting) of the same size as the gable windows and in line with them, thus permitting a circulation of air through the entire building when necessary. A projecting ventilator should be built in the roof just over the center of the building, and should be furnished with slides operated with cords, as a means of additional ventilation.

Materials and construction.—Three rows of brick piers 18 inches high serve as a foundation for the building, and on these rest the joists, which are 4 by 4 inches in size and placed 3 feet apart. Matched flooring should be well nailed to the joists, matched pine lumber

should be used for the walls, the building should be covered with a good shingle roof, and the whole structure should be well painted with two coats of good paint.

In such a climate as that of southern New Jersey it is not necessary to plaster the inside walls or sheathe with building paper, but in a colder climate it would undoubtedly be well to give such protection.

The partitions between the sections are made of inch boards running to the roof. All inside doors are of wire netting and are hung with spring hinges so as to be self-closing to prevent the possible escape of the birds. Each pen has one of these doors and likewise each end of the building, and both inside and outside doors should be kept securely locked.

Nest boxes.—Nesting places (figs. 2 and 3) can be made as follows: Inch boards 12 inches wide, with parallel cross cleats (from strips 1 inch square) nailed on 9 inches apart, are set upright 12 inches apart (in the clear), with edges against the partition and securely nailed at top and bottom. These boards extend from floor to roof, and

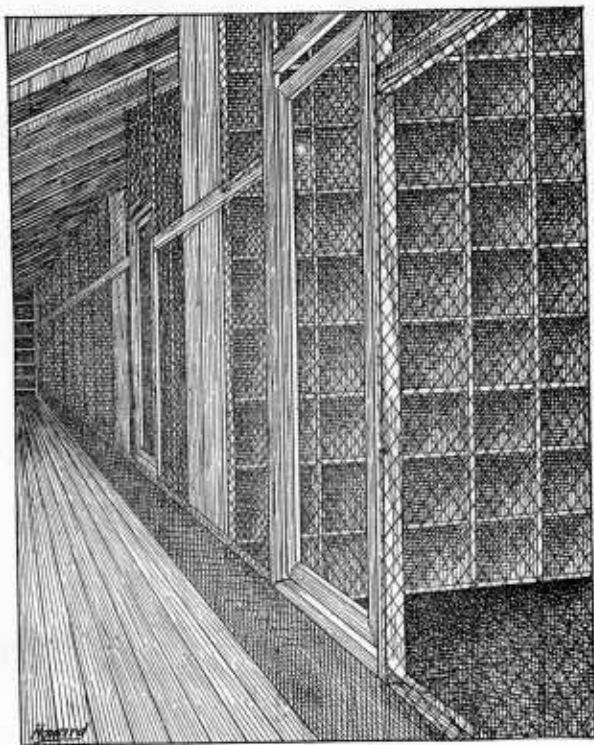


FIG. 2.—Interior view of pigeon house.

when in position boards 12 inches square of inch stuff are cut and placed on the cleats to form the floors of the nest boxes, thus making little homes for the pigeons 9 inches high with a floor 12 inches square. The sliding floor of each box furnishes an easy method of removal for cleaning. Each pen contains two sets of nest boxes, one against each partition containing 60 boxes, or 120 in all, supplying each pair of birds with 2 nesting places, with 20 to spare. The bottom of the lowest box is 15 inches from the floor. Nests should not be placed directly on the floor if possible to avoid it. Some pairs will persistently build on the floor, in which case it may be best to humor them and make no attempt to compel them to nest elsewhere.

No provision should be made for perches within the house, the writer's experience being that no advantage results therefrom. It is a good practice to visit each house every night before retiring, to see that everything is in proper shape. The birds will almost invariably be found each in a separate box, the same bird in the same box night after night. They are thus secluded and do not soil each other by their droppings nor foul the floors as they would if they occupied individual perches outside the boxes.

A long running board within the pen is a disadvantage, for on it a cock inclined to play the boss can chase away other birds and keep

the whole flock in an uproar. On the other hand, with each bird settled away in a separate nesting place, little opportunity is given for fighting; and if it be attempted, the bird within the box has a great advantage over the one outside and can soon compel a retreat. The use of small earthenware nesting pans (fig. 3) is advised. Some pairs

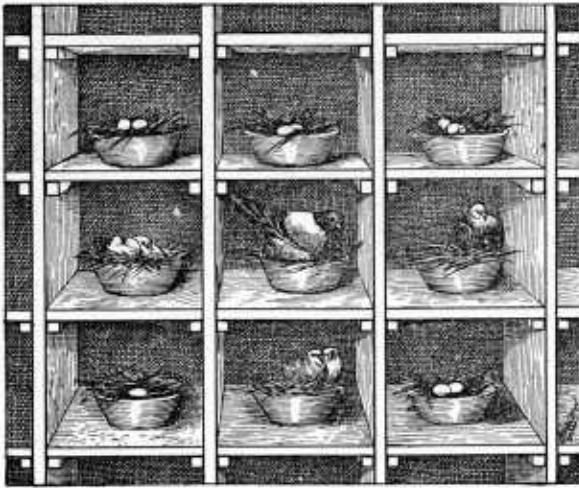


FIG. 3.—Nest boxes and nest pans.

may refuse to use them, and persist in building on the floor of the nest box. As a safeguard against lice, the base of the nest should be made of tobacco stems. Straw should be supplied for the use of the birds in completing the nests.

THE FLY.

The house being finished, consideration must next be given to providing for the proper exercise of the birds in the open air and sunlight. This is secured by erecting a wire-netting cage or fly (figs. 1, 4, 5, and 6) communicating with the house by means of small openings. The ground should be made level if not naturally so, and for a house of the size indicated it should extend out 32 feet from the side of the house. The frame of the fly is made of hemlock posts 2 by 3 inches in size, and 8 feet high above the ground. These posts should be set in three rows parallel with the side of the building, 6 posts in each row (fig. 4). The outer row supports the end of the fly 32 feet from the building. Then another row is set half way in toward the

house, and the third along the side of the house. Hemlock boards an inch thick and 4 inches wide are nailed to the top and bottom around the sides and an additional 4-inch board is nailed between at

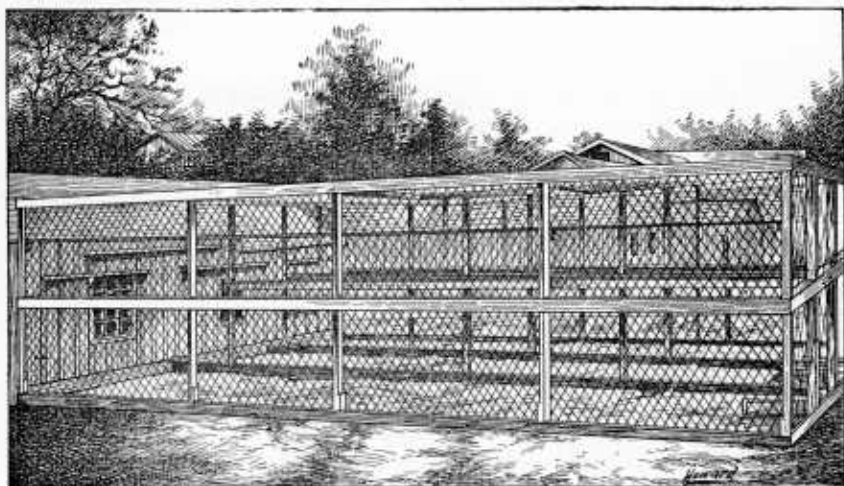


FIG. 4.—The house and the fly.

such a height that a netting 4 feet wide will reach from it to the strip at the bottom and a 3-foot netting from it to the strip at the top, thus making, when the netting is properly nailed on, a wall 8 feet high.

The posts are so placed as to divide the fly into sections corresponding to the pens of the house, thus giving each lot of 50 pairs a separate pen and a communicating fly. An assistant is required to stretch the netting while it is being nailed on. It is a good plan to fasten one end and the top edge first, then the assistant with a stout forked stick can

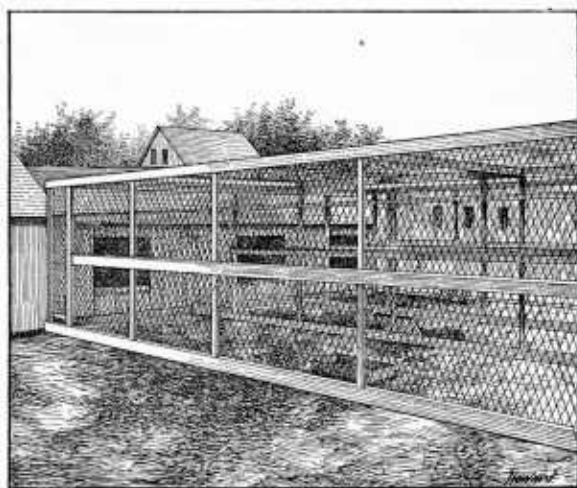


FIG. 5.—The house and the fly.

stretch the netting smoothly while the lower edge is being securely fastened. Doors opening into each section are provided. These are placed 1 foot from the side of the house, all in line, covered

with netting and put up with spring hinges. The latter are very important for they secure promptly self-closing doors, thus effectually preventing the escape of any valuable "homers" which may have been brought from a distance and which, if permitted to gain the free air, will immediately fly to their former homes. Brackets are nailed to all the posts 4 feet from the ground and boards 4 inches wide are nailed to them to furnish the pigeons a place to alight and walk when not in flight. These boards are placed at the ends of the sections as well as along the sides. No cross boards or roosting poles are permitted to obstruct the clear passage, for if they were used, birds

might injure themselves when exercising or in trying to escape from the keeper in his necessary attempts to catch certain birds.

The birds are allowed to pass from the house to the fly through an opening in each section 3 inches wide and 4 inches high, rounded at the top, with a lighting board 6 inches wide on either side. Slides are arranged to close these

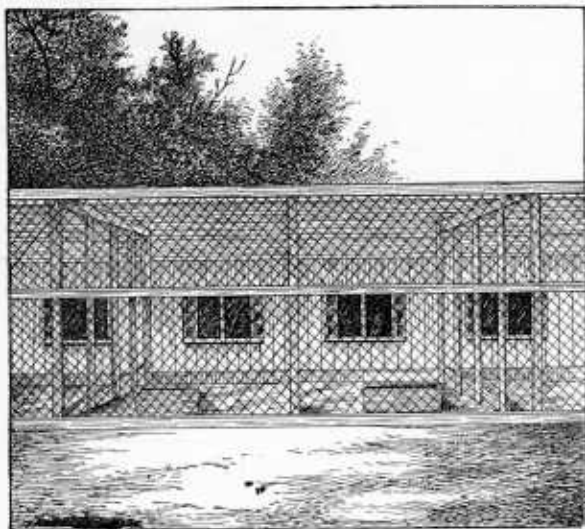


FIG. 6.—The house and the fly.

openings when it is desired temporarily to confine the birds in either fly or house for the purpose of catching any one, or in severe weather.

The cost of the house 12 by 40 feet in size, well painted outside and whitewashed thoroughly on the inside, with materials at present prices, is \$250. It is safe to estimate the cost of houses at \$1 per pair of birds, not counting the earthen dishes used for nests.

For beginners who desire to start with 25 pairs or less, temporary structures can be improvised or existing buildings utilized until sufficient experience has been gained to enable them to branch out.

VARIETIES OF PIGEONS.

THE HOMER.

The best variety of pigeons to keep for squab raising is the "straight" Homer (fig. 7).

These magnificent birds are large and healthy; are good workers, always active and hunting about like the Leghorn fowls; are the best of feeders; are of quiet disposition when properly mated; and their eggs are seldom infertile. For these reasons I consider the straight Homers par excellence among all the pigeon kind for squab farming.

THE DRAGOON.

The Dragoon (fig. 8) is much esteemed by some, but I have yet to find an intelligent breeder who accords the first place to any variety except the Homer. When the latter are not procurable in sufficient numbers or the price seems to be too high, a cross between a Homer and a Dragoon usually gives excellent results. The Dragoon is a large bird, a good worker and feeder, as quiet in disposition as the Homer, and, when crossed as directed, the squabs are of good size. The crossing of these varieties can be accom-



FIG. 7.—White Homing pigeon.

plished with equal success either by mating a Homer cock and a Dragoon hen, or a Dragoon cock and a Homer hen. Straight Dragoon squabs are usually five weeks in growing to sufficient size for market, while straight Homer squabs are ready in four weeks and sometimes a trifle less.

THE DUCHESSE.

By some this variety is preferred. The writer is not enthusiastic in regard to these birds because a full blood of this variety is not nearly so good a feeder as the Homer. A cross of Homer and Duchesse blood will yield a good squab, but not equal to the straight Homer, and the presence of feathers on the legs, a characteristic of the Duchesse, is a disadvantage when dressing them.

THE RUNT.

The Runt is the giant among pigeons. It is very highly spoken of by some breeders because the squabs are so large, but the number of squabs is small. It takes an extra good pair of Runts to yield four

pairs of squabs a year. While crossing with Homer blood will increase the number of squabs, the tendency of the squabs of such mixed blood to be dark in flesh is so serious a disadvantage that I can not recommend them, for the novice will soon learn that dark-fleshed squabs are cut in price when he takes them to market. I find that even one-quarter of Runt blood is often sufficient to make dark squabs. Other objections to this variety are that both parents and squabs consume more food than Homers and they are less active and slower in driving.

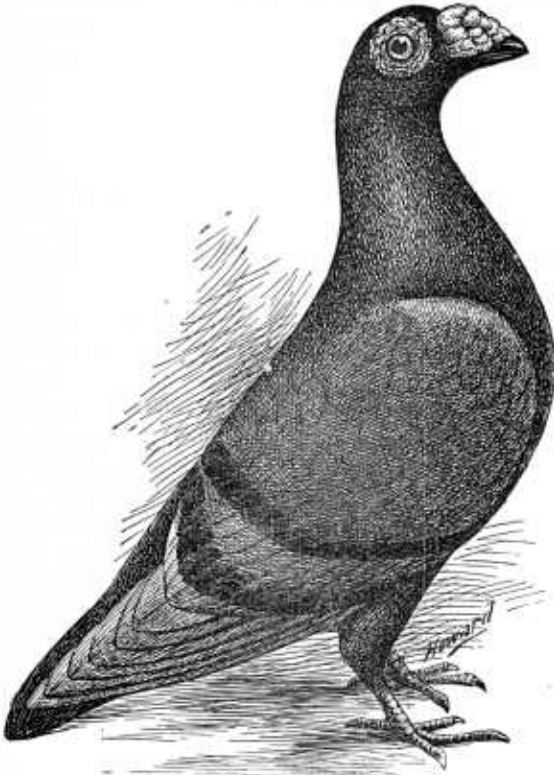


FIG. 8.—Blue Dagoon pigeon.

LESSONS FROM OBSERVATIONS AND EXPERIENCE.

In traveling about the country and visiting many squab farms, I seldom find a flock of straight Homers, but frequently see all kinds mixed together, with no apparent system or purpose on the part of the breeder, the evident desire being to raise, if possible, a few squabs. I have made the proper kinds of birds for squab growing my study for the last five years, visiting many different places during this period. My experience, not only from my own pens, but from this extended observation, teaches me that for profitable squab growing there is nothing equal to the straight Homer.

About ten years ago a gentleman advertised for sale a lot of pigeons. I visited him and found about 200 pairs in an old corn erib. I picked

out of the entire lot 15 pairs, thinking that I had good stock for the squab business. I kept them for several weeks but the results were so meager that I became disgusted, and, when a customer came along and made me an offer, I sold him the whole lot; but the birds never gave him any substantial results. I mention this because it is a common experience with those who start with poorly selected birds.

When I next "contracted the fever" I purchased a few pairs of straight Homers and in due time 40 pairs of as pretty birds as one usually finds graced my pigeon quarters.

In two years these birds averaged me $7\frac{1}{2}$ pairs of squabs per pair per year, while some pairs gave me 10 pairs and a few yielded as high as 12 pairs. But I think that any claim of a flock averaging 12 pairs of squabs per pair annually is extravagant.

Advertisements of straight Homers often attract prospective purchasers who, when they have bought, are very much disappointed. Straight Homers are hard to procure at a low figure. Sometimes, though straight enough, they are worn-out birds, which will merely prove a bill of expense.

BREEDING.

In the selection of breeding stock the beginner should consult some one having experience and critical knowledge and, if possible, secure his active assistance.

MATING UP.

A very important detail in squab raising is the proper mating of the flock. Unless the birds are known to be mated they should not be placed in the breeding quarters. Hence, a mating house fitted with nest boxes is necessary even when but few birds are kept, and in this house they should be placed until they begin to carry material and build nests; then, and not until then, they may be transferred to the permanent breeding house.

When but few birds are to be mated a box with a wire-netting front and a partition can be used, or any small room can be improvised.

KEEPING A RECORD.

Before the birds are placed in the breeding house each bird should be banded. Open numbered bands can be purchased of dealers at about 1 cent a piece in quantities of 100. Squabs intended for breeding must be banded in the nest before able to fly, as by so doing nest mates can surely be distinguished. If closed bands are used, they can only be put on when squabs are quite small.

It is advisable to keep a record book and enter the number of each bird, noting the sex, color, and any other distinguishing mark, so that

the record will accurately describe the bird. Then should any bird die the record will show its sex and another mate can be substituted, or the remaining bird can be taken out and placed in the mating coop until again mated.

If a beginner is in possession of a flock of 50 pairs of selected birds, well mated, this record will make easy the matter of increasing his flock intelligently. Young birds, from the best breeders only, should be selected and banded as directed. At the age of 6 weeks these youngsters should be taken out and placed in a separate coop, and in this coop none but young stock should be kept. All young birds, before being put thus in the separate pen, should have all tail quills plucked out, because there is less mortality among birds so treated while attaining their growth.

It is well for a beginner to keep a record of the squabs as produced, numbering each nest, and entering in the records the birds working in each nest, and the number of squabs produced. Some pairs will produce 10 pairs of squabs a year, while others may yield only 5. The record will enable the breeder to save young breeding stock from his prolific breeders only. If the bands are numbered consecutively and the birds are banded before leaving the nest, the nest mates will always have consecutive numbers. It sometimes happens that a nest will have only 1 bird in it, in which case the record should indicate that fact. A very simple way is to underscore after the record of each nest is made, thus:

478—b. b. cock.

479—b. b. hen.

480—b. ch. cock.

481—r. ch. hen.

This means that 478 is a blue-barred cock and the only occupant of the nest; 479 and 480 are nest mates, the hen being blue-barred, and the cock blue-checkered; 481 is a red-checkered hen from another nest, and the only occupant of the nest.

INBREEDING AND CROSSING.

Care must be taken not to inbreed. Under no circumstances permit 479 and 480 to breed for they are nest mates. If they should mate they must be separated until a new mate is chosen by each. Numbers 478 and 479, or 478 and 481 can be safely mated.

When increasing stock, it is a good plan to get a few pairs of mated Homers from a different source, as this may afford an excellent means of bringing in a different strain of blood.

Do not buy any cross-bred birds if possible to avoid it, unless you know exactly what you are getting. If desirous of increasing the flock, when it is impossible to procure straight Homers, the next best

plan is to get some selected Dragoons of pure blood and mate with young straight Homers whose records have been kept as directed. Such crossing ought to give fair results. The offspring of these birds may be mated with full-blooded Homers, making squabs of three-fourths Homer and one-fourth Dragoon blood. Squabs from birds of half blood should not be mated with each other, but with full-blooded mates as directed. These quarter-blood squabs will be a little larger than straight Homers, and will be ready for the market almost as soon. In making this cross, however, much care must be exercised to have very carefully selected Dragoons with good squab-producing records.

FEEDS AND FEEDING.

Though the houses may be well constructed and the birds well selected and properly mated, no success can be expected unless proper kinds of feed are procured and the birds are regularly fed. While it is true that some breeders have had fair success for a while by feeding only cracked corn and wheat, long-continued feeding on these two staples alone invariably fails to produce as good squabs or as many as when a further variety of grains is fed. In their free state, pigeons can select a variety of grains, avoiding one kind and choosing another, as their appetites dictate, but when they are kept in a small inclosure they must, of course, take what the breeder gives them. Hence, it becomes highly important that the breeder have good judgment as to kinds and quality of food to set before them, and that he have interest enough in his flock to avoid stinting the quantity, or feeding too largely of one kind because its price happens to be low.

The feed room.—As already suggested, a room should be set apart for a store room. It should be supplied with a feed bin divided into the proper number of sections to hold each variety of feed used; or, instead of such feed bin, small barrels with lids may be used.

Feeds and other supplies.—In these receptacles should be kept a generous supply of sifted cracked corn, Canada peas, wheat, German millet, Kafir corn, and hemp. These are the six principal feeds.

On the floor of each pen keep about a peck of clean sand evenly spread. Procure three boxes about the size of small cigar boxes; fill one about one-third full of fine table salt, the second with cracked oyster shells, pigeon size, and the third with ground charcoal, about as fine as ground coffee. These three substances are very essential to the health of pigeons. Clean out and replenish each of these boxes weekly. Do not fail to keep the salt box filled and before them all the time, for the health of pigeons demands it.

Feeding troughs.—In each pen is placed a feeding trough, made of inch stuff, 10 inches wide, 4 feet long, and with sides $1\frac{1}{2}$ inches high. This trough is placed in the middle of the pen to avoid feeding in the

open fly, where the birds and grain would both be subject to the weather. In feeding, a tin pail holding a peck is convenient, as is also a grocer's tin scoop No. 3, which holds about 3 pints.

Rations.—For the morning ration give equal parts of cracked corn, wheat, and peas, well mixed, using 2 scoopfuls of the mixture to each pen of 50 pairs of birds, and taking good care to see that all droppings are cleaned out of the troughs before feed is put in.

The ration for the afternoon is composed of cracked corn, Kafir corn, millet, and peas in equal parts.

If at any feeding time any of the previous supply has not been used, reduce the quantity. If, however, the troughs should be entirely bare, slightly increase the quantity. When a number of squabs are in the nests the birds will feed more freely and need a more liberal supply.

Special feeds.—On Thursdays and Sundays use hemp in the ration instead of millet. Care must be taken that the birds do not get this feed too often, nor in too large quantity, as it is very fattening and if fed in excess has a tendency to give the birds vertigo. For the same reason caution must be used in feeding millet. A small quantity of rice may be fed once a week with advantage.

Time of feeding.—Regularity in time of feeding should be strictly observed. The morning feed in summer should be given at 6.30 and in the winter at 7 or 7.30. The afternoon ration should be given at 4 o'clock in the summer and 3 in the winter. The afternoon hours are quite important, and must be adhered to in order that the birds may have ample opportunity to fill themselves and feed their young before nightfall.

Be sure to attend to the feeding yourself. Always go alone; never permit anyone to accompany you, for birds are often very timid of strangers, and chilled eggs may result if a stranger should remain in the fly at feeding time. Go in quietly, making no noise or sudden movements; and, after the feed is placed in the trough, always leave the birds alone for a full hour that they may be absolutely uninterrupted in feeding themselves and the squabs.

Feeding indoors.—Never feed out of doors under any circumstances in either summer or winter. Besides the loss occasioned by sparrows taking advantage of the opportunity to help themselves, in summer the heavy dews and hot nights will cause any feed left over to sour, and in winter storm and sleet will prevent birds from feeding.

A few cautions.—Cracked corn must be sifted, for fine meal can not be used by the birds, and in hot muggy weather it will sour over night, necessitating extra trouble in cleaning out the troughs.

Be sure that every grain is sound and strictly first-class. Do not feed new wheat until it is thoroughly dry, usually not sooner than

October 1, and do not feed new corn until Christmas. Especially avoid musty grain.

Because one of these feeds mentioned may sometimes be quite cheap, do not be tempted to feed largely of it, thinking to save money thereby. This practice so often causes trouble that caution is urged in departing from the proportions named.

Too much wheat in the ration will almost always cause looseness of bowels and make the squabs skinny and dark.

Birds need a variety of feed, and it would be as injudicious and disastrous to feed exclusively on peas, a high-priced food, as on wheat alone or some other cheap food.



FIG. 9.—Squabs ("peepers"), 12 hours old.

How the squabs are fed.—Some wonder why squabs die in the nest or get on the floor or do not fatten up properly. Very frequently the reason is simply because the old birds are not properly fed. We should constantly bear in mind that a squab is very different from a chick. A newly hatched chick can run about and help itself to food and water. The squab, on the other hand, is utterly helpless at birth (figs. 9 and 10); it is unable to walk and must be fed in the nest with whatever the parent bird brings to it. For about five days nature provides a special food commonly called "pigeon milk," a creamy substance contained in the crops of the pigeons and which they have the

power to eject from their mouths into the mouths of their tender young. After a few days of such feeding the squab is fed on such grains as the pigeon gets, and by the same process of transfer from the parent's mouth to its own; hence, it is essential that proper food be given the pigeons.

Cost of feeding.—The cost of feeding the kinds and quantities of grain recommended will be of interest to novices. With wheat at 80 cents a bushel, sifted cracked corn at \$1 per hundredweight, Kafir corn at 90 cents per bushel, millet at 90 cents, hemp at \$1.30, and peas at \$1.10 per bushel, the cost will be one-seventh of a cent a day for each bird, or about 52 cents a year. Feeding at such cost, I have

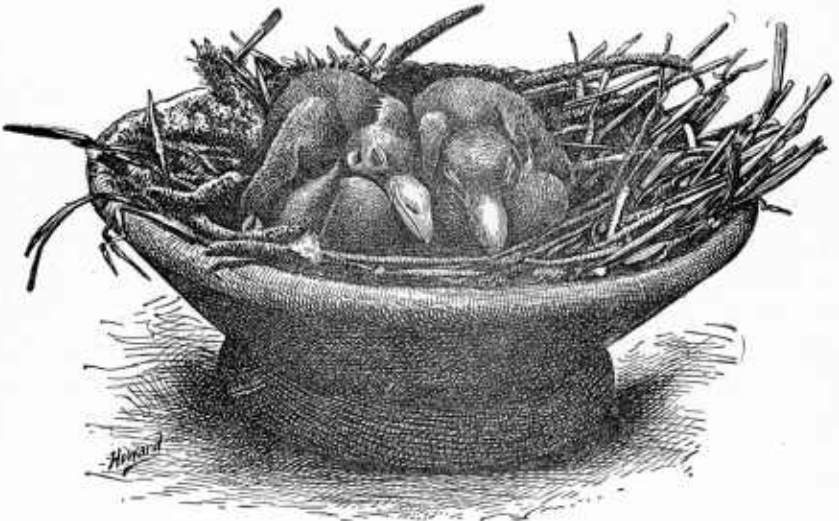


FIG. 10.—Squabs ("squeakers"), 24 hours old.

never failed to realize an annual net return of \$1.50 per pair net, but I was never able to secure such returns when feeding steadily on a wheat and corn diet.

Watering.—A generous supply of fresh, pure water for drinking purposes should be supplied. The flock should be watered each morning before the supply of feed is given. The water supply should be near the feeding troughs. Two-gallon stone fountains may be used in summer and galvanized iron ones in winter. These fountains are placed on the floors of the pens, one to each pen being sufficient. They should be thoroughly cleaned out each morning and filled with pure fresh water, which will last all day, although during the heated spell of summer it is better to put in a fresh supply of water before the afternoon feeding. For thoroughness in cleaning the fountains, it is well to use a small brush. About twice a week place a piece of stone lime

about the size of a hickory nut in each fountain. At least three times a month the fountain should be disinfected by using 10 drops of carbolic acid to a two-gallon fountain, leaving the acid in the water for the birds to drink that day, as it will do them no harm.

OTHER DETAILS OF MANAGEMENT.

No success can be achieved in squab raising even with the best of houses, fine well-mated stock, and proper food, unless the flock is given good care and management.

Bathing.—Birds should always have a supply of water in which to bathe. Bath tubs made of galvanized iron or zinc, 3 inches deep, and about 30 inches square, and set in an open boxing of inch stuff, are placed in the end of the fly opposite the coop. These furnish convenient bathing places for the birds, which are much used and enjoyed by them. Some use these bath tubs instead of fountains for the supply of drinking water, but when a bird bathes a milky scum appears on the surface of the water and it soon becomes quite foul, and unless changed several times daily is surely unfit for drinking purposes. After the birds are through bathing the tubs should be emptied and turned upside down.

An excellent way to manage the water question is to provide a trough to run through the flies across the ends. This trough can be made of inch stuff, 12 inches wide, and 3 inches high; and, when city water or other running supply is available, a small steady stream can be allowed to flow in at one end and out at the other, which should be slightly lower to cause a current. The escaping water should empty into a barrel sunk so as to bring its top level with the ground.

Whitewashing.—A first requisite is that the new house should be thoroughly lime-washed inside before occupancy. Carbolic acid should be used in the preparation of the wash in the ratio of a teaspoonful of the acid to 2 gallons of wash. The crude dark acid is as good for this purpose as the refined article, and costs much less. The acid serves to repel lice. This wash should be thoroughly spread over the entire surface of the inside of a new coop, and this whitewashing should be repeated once a year thereafter. Besides adding to the appearance of the house and making it lighter, it sweetens and freshens the interior and destroys any lice or mites. To make the application more effective the wash should be carefully worked into the corners and crevices.

Cleaning.—Some breeders do not clean out nest boxes and pens more than twice a year, and often only when they need some manure for gardening operations. It is a very dangerous practice to allow the droppings to accumulate, and, in protracted damp weather, a decided menace to health. I invariably clean all my houses regularly once a

week. I take out the movable bottoms of the nest boxes, and with a large butcher knife or steel scraper remove all excrement, letting it fall to the floor of the pen. If a nest box contains young squabs or eggs or a freshly made nest it is not disturbed, but is left to take its turn at a subsequent cleaning. After all nest boxes are well cleaned a spade is used to loosen the droppings on the floor, and all are shoveled into a wheelbarrow in the passageway and the floor is swept clean.

The flies are cleaned out from four to six times a year. I use about 4 inches of clean sand in the flies, the sand being sifted and furnishing a soft floor on which the birds alight. With this there is no danger of the birds laming themselves or breaking their legs, and the sand is always free from mud. A pinch of air-slacked sifted lime (carbulated by the addition of a scant teacup of crude carbolic acid to a peck of lime) is scattered in each nest, a peck of dry sand is scattered on the floor, and the coop is ready for another week's run.

Objection is made by some breeders that the weekly cleaning out unnecessarily disturbs the birds, compelling the timid ones to leave their nests, causing eggs to get chilled, etc. It certainly is possible to make a great uproar in the coop during the cleaning, but this I never permit. The cleaner should enter the pen quietly, making no violent or sudden motions, and dispatch the work as quickly as possible. The birds should be so treated that, when it is necessary to enter their quarters, they know that no harm is intended. In this weekly cleaning the supply of salt, oyster shells, and charcoal should be renewed and a fresh supply of tobacco stems, cut into 6-inch lengths, put into each pen.

Light-weight squabs.—If squabs at the proper age for market are of light weight— $6\frac{1}{2}$ or 7 pounds to the dozen—they are not profitable, for they will always bring lower prices when sent to market. Such squabs indicate either that the parent birds are poor feeders or that the breeder has fed improperly. If a record has been carefully kept, as suggested, an inspection of it will show whether a particular pair of birds regularly produce poor squabs. If so, and the food given has been suitable in quantity and variety, this pair of birds should be disposed of at once. During the moulting season the squabs may be expected to be less plump than when the birds have less strain on them. These light-weight squabs cut down the profits more than some think. I have frequently seen a lot of nearly 100 sold for \$4.25 per dozen straight, while another lot sent at the same time and to the same buyer has brought \$4.25 for some, \$4 for others, and \$3.50, and even as low as \$1.75 for others. Frequently this difference is directly traceable to the kind of feed given.

Transferring a squab.—Sometimes, even with right feeding, a squab will be observed to be of light weight, being much smaller than its

nest mate. If there is in the pigeon house a nest with only one young squab of the same size as the weakling, it is a good practice to transfer the latter to this nest, when the parents of the younger squab will feed both, usually with good results. It must be remembered, however, that no change of this kind should be made until after the squab is a week old, or during the time the parents are furnishing the "pigeon milk."

KILLING AND DRESSING.

The squabs should be killed before they get so large that they leave the nests. The standard size is 8 pounds to the dozen. With properly kept birds this weight is usually attained in four weeks with straight Homers, and five weeks with Dragoons.

Preparation.—The producer should have a regular shipping day, selecting such as best suits his convenience, and on that day he should kill all squabs which are of proper size (fig. 11). The squabs should be caught in the morning before the feeding and watering is done. This assures empty crops. Judgment must be used in selecting the squabs, or some which are too light may be taken, causing a cut in the price. As caught, the squabs should be placed in pigeon hampers and taken to the killing room, which in cool weather should be heated to be made comfortable for the picker. An oil stove lighted at the time of beginning to catch the squabs, will temper the room nicely by the time the squabs are all brought in if the flock is large. Place the hampers within easy reach of the chair in which the picker is to sit, and have a basin of water close by. Directly in front of the picker, suspend in a horizontal position a ring of wood or iron, about a foot in diameter, and hang from the ring four cords 8 inches long, terminating in slip nooses.

Killing the squabs.—Catch a squab from the hamper, and suspend it by passing one of the nooses around the legs, tail, and wings, letting about 2 inches of the ends of the wings project beyond the noose, and tighten it well. Insert the killing knife (sold for such purposes) well into the back of the mouth and draw it forward cutting clear into the brain, hang a weighted wire in the bill and let the bird bleed. The wire is six inches long, hooked and pointed at the upper end, and weighted at the lower end with a piece of lead the size of a hulled walnut. Four birds are killed in turn, and picking begins on No. 1 as soon as dead. Novices may kill and pick but one at a time until some speed is gained, but an expert picker will kill four and "rough pick" them all before they get too cold.

Dressing the squabs.—Allow the birds to remain suspended, but release the wings, grasping them both in the left hand back of the bird. Moisten the thumb and forefingers of the right hand in the pan of water, and begin picking the neck, leaving about three-quarters of

an inch next the head unpicked. Still hold the wings in the left hand until the entire front of the bird, legs included, is picked. Then bringing the wings in front of the bird, hold in the left hand as before, and remove the balance of feathers from the body. Now, with wings still in left hand pluck quills from both wings at once, and also the larger feathers, and then finish each wing separately. This completes the "rough picking," after which they must be pinfeathered, in which operation a small knife is helpful. An expert picker, when he has finished the third bird, kills three more so that they may be bleeding while he is at work with the fourth. As soon as finished each squab is dropped into a tub of cold water to drive out the animal heat and make the birds more firm and plump.

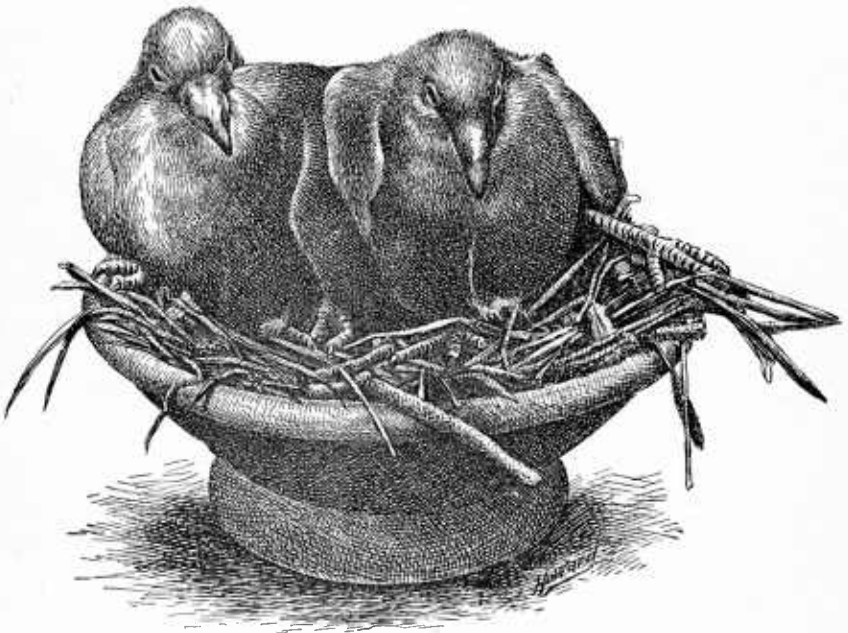


FIG. 11.—Squabs ("squealers"), 28 days old, ready for market.

An expert picker can kill and "rough pick" 20 squabs an hour or completely dress 12 to 15 in the same time.

It pays well to use care in picking not to tear the skin or leave any feathers on the birds. Well-fattened birds are seldom torn by the expert picker. The weighted wire is of advantage in slightly stretching the skin and making it less liable to tear.

When all the squabs are dressed, the feet and mouths must be thoroughly washed of all filth and blood; they should be placed again for a few minutes in clean cold water, and then hung on a drying rack for five minutes to drain.

Marketing.—If the squabs are sold to a local dealer, they may be taken from the rack at once, placed in a suitable basket, and delivered immediately. If they are to be expressed to a distant market, packing in ice is necessary, and a box or barrel must be used. Place a layer of cracked ice at the bottom, alternate with layers of birds and ice, and finish with a generous topping of ice. Only in quite cold weather is it safe to omit ice. Place a secure covering on the package and mark full directions to whom shipped, as well as your own address, and the number of birds.

DISEASES, PARASITES, AND REMEDIES.

With good, wholesome food, proper housing and care, very little disease is usually encountered. The best preventives of disease are: (1) A dry house, free from drafts; (2) untainted grains; (3) pure water; (4) regularity of feeding; and (5) cleanliness.

DISEASES.

Going light.—This disease is characterized by moping and drooping of the bird, which, when examined, will usually be found to be thin in flesh. Diarrhea is frequently a first symptom, which may be checked by a dose of sweet-fern tea. If the discharge is slimy give a dropperful of cod liver oil and creosote every night and morning until improvement is noticed. This remedy is prepared by mixing 1 dram of creosote with 2 ounces of cod liver oil. By a dropper is meant the little instrument which is used in filling fountain pens, and which is very convenient to use in giving drops or small doses.

If the disease has so far progressed that the bird breathes heavily or gasps for breath, use what some have designated as the "hatchet" remedy, that is, kill the bird. This disease usually manifests itself only during the moulting season, and in all cases the tail quills should be plucked.

I think the disease is often due to unsound grain or permitting feed to lie on the ground and sour. In light attacks three drops of compound tincture of gentian is sometimes sufficient to effect a cure, if the tail has been plucked. Too hard driving by the cock bird may cause the trouble, by preventing the hen from getting full quantity of food. The first diarrhea may be caused by feeding too much wheat or grain that is too new. A good remedy in such cases is to give two dropperfuls of sweet-fern tea at once.

Roup.—Roup may be known by a discharge from the nostrils and a very offensive breath, and is probably the sequence of a neglected cold, coupled with a diseased condition of the bird. It is very contagious and requires careful treatment. Fill a small oil can with

camphorated oil, and after washing the nostrils well, put three or four drops in each of them and one or two in the mouth. Another remedy is to use two drops of kerosene oil in the nostrils and one or two in the mouth. Watch birds carefully until cured. If the birds are well taken care of, this remedy is a sure cure.

Vertigo.—When afflicted with vertigo the bird turns its head over its shoulder and seems dizzy, frequently falling down. It is probably an affection of the brain. I have known a bird with vertigo to live for two years, always having a spell when I entered the coop. I have never known a case to be cured, and the best treatment is the “hatchet” remedy.

Leg and wing troubles.—In some cases, the legs of the bird seem too weak to support its body. Homers and short-legged varieties very seldom have this trouble. Inbreeding I believe to be one of the chief causes. Do not inbreed, always keep a record, and mate carefully, and you need not fear this trouble.

Birds sometimes may strike their wings in going in or out of the entrance, or may hit each other with their wings in fighting, and such blows may cause lumps to form. Some advise opening such a lump with the knife, but this treatment, in my experience, has always caused a stiff joint, and I can not recommend it. The only remedy I have found effectual is to paint the part occasionally with tincture of iodine. I have successfully treated several cases in this way, but never had a successful one with the knife treatment.

A swelling sometimes forms on the wing joint next the body. All varieties are more or less subject to this. The swelling has no corruption in it. The remedy is to paint with iodine tincture, and, if the wing droops, lessen the weight by plucking the wing quills.

Canker.—The appearance of canker is indicated by a profuse discharge of cheesy matter from the side of the mouth. As soon as noticed, treatment should be given. Prepare a solution of bluestone, and with a small camel's hair brush swab well the part affected. Do this two days in succession and then with a match stem carefully remove the cheesy growth, being very careful not to draw blood, and then put a small quantity of powdered sulphur in the throat. Do not attempt to check the discharge as it first appears except by treating as mentioned. If the bird is badly cankered before treatment begins, and the mouth well clotted, or if there is a large cankerous lump well down in the throat, treatment seldom is of any avail, and usually such a case is best remedied by killing the bird. In the case of valuable birds the knife may be used as a last resort.

To keep the flock free from this disease feed only sound grains and give the purest of water. Never place newly purchased birds in the flies until first inspected thoroughly by opening the mouth to see if

any canker exists. When any is found, they should be handed back to the seller, for canker is one of the most dreaded diseases.

When the disease is mild in form, by the prompt use of the remedies recommended here, favorable results are almost always secured.

Cholera.—This is the worst of all diseases with which the breeder contends, and more loss is occasioned by this complaint than by all others combined. It runs its course with fatal rapidity, and, when once present in a flock, may quickly decimate the pens. Happily, however, the cause of cholera may almost always be traced to bad management and bad feeding, so that a careful and intelligent breeder seldom is called upon to carry out dead birds by the bucketful, as sometimes happens with flocks poorly kept.

Usually when first affected the bird mopes about with a full crop, which if examined will be found to be full of water with a very offensive smell. When this is observed the bird must be carefully caught, the water gently squeezed from the crop, and a dropperful of the cod liver oil and creosote mixture administered.

If the whole flock is diseased, put ten drops of carbolic acid to a gallon of their drinking water for two mornings. Be very careful what you feed, and watch the flock very closely, because if this trouble gets a foothold the entire flock may die in a short time. After having used the carbolic acid, use a tablespoonful of tincture of gentian to the gallon of drinking water three times in succession.

If birds are well cared for this disease need cause very little anxiety, but lack of cleanliness and unsound food and impure water invite the disease in its worst form.

GENERAL REMEDIES.

In addition to the specific remedies already mentioned, there are two general ones which are most useful in squab raising.

Gentian as a tonic.—For a tonic, after trying everything recommended, I find nothing equal to gentian. I use the compound extract, giving a tablespoonful to a gallon in the drinking fountain. During the moulting season in September, October, and November, I use a tonic every Sunday morning, and for the balance of the year only when the birds seem to be out of condition.

Sweet-fern tea.—Whenever it is noticed that the birds have looseness of the bowels, I use sweet-fern tea, a teacup of the tea to 2 gallons of water in the drinking fountain. The tea is prepared by boiling a good double handful of the dried leaves in about 12 gallons of water, letting it boil down one-half. Strain and put in bottles or jugs and set away for use, out of the reach of frost. Sweet fern is botanically known as *Myrica asplenifolia*.

LICE.

There are two kinds of lice which infest pigeons: (1) The long variety, which confines itself to the wings, and is seldom troublesome; and (2) the small round louse, which preys on the head and body of the bird, and, if allowed to increase, will deplete the blood and cause death.

These pests breed at so astonishing a rate in warm weather that, if they once get a foothold, vigorous measures must be promptly used, or all weak or ailing birds will be literally eaten up. If a loft becomes infested, clean out thoroughly and use kerosene oil freely in nests and perches, seeing that the oil saturates all surfaces and gets into all cracks and crevices, and that the corners are not forgotten. Then at the weekly cleaning scatter powdered lime well saturated with crude carbolic acid in the corners of all nests.

Sawdust should not be used for the bottoms of nests and on the floors, as is sometimes suggested, unless it be first treated well with carbolic acid, and even then the propriety of using it is doubtful. The worst affliction of lice the writer's pigeons ever suffered was when he used sawdust. The nest pans fairly swarmed with them. When he got rid of them, which required heroic treatment with kerosene and dusting the birds with Persian insect powder, after thoroughly cleaning the house, he never used sawdust again.

Attention to cleanliness and regular baths for the birds are essential in avoiding these pests. Birds that have three baths a week, houses well cleaned weekly, carbolated lime scattered in nests, and tobacco stems for nests will not be troubled with body lice.

In buying new stock carefully examine for lice, and if any are found dust with Persian insect powder or snuff, keep them separate, and be sure that you have killed all lice before placing them with the breeding flock.

CAUSES OF CHILLED EGGS AND DEAD SQUABS.

During the very long and severe winter of 1903-04 many squab breeders met with heavy losses by eggs becoming chilled in nests and squabs dying shortly after being hatched.

To show the extent of these losses, the writer will cite a few instances which came under his immediate notice: One breeder with 500 pairs in the month of January, 1904, lost 148 eggs and 64 squabs, marketing only 166 squabs. A second flock of the same size suffered a loss of 106 eggs and squabs during a single week in February, with very heavy losses for several previous weeks. In a third flock of the same number of birds, the owner marketed as few as 24 squabs in a week and seldom had more than 40. Yet from a fourth flock of the same size there were sent to market in January, 1904, 303 squabs, and the losses from chilled eggs and dead squabs amounted to only 16. The

net returns for the squabs sold were 90 cents a pair. Now, comparing this result with that in the first case above mentioned, which showed the best results of the three, we have the following:

Fourth flock, 303 squabs, at 90 cents a pair, netted.....	\$136.35
First flock, 166 squabs, at 90 cents a pair, netted.....	74.70
Loss sustained	61.65

With feed bills for each of these flocks approximating \$18 per week, it can be seen that 20 pairs of squabs at 90 cents a pair were necessary to meet that item of expense. The first breeder mentioned barely reached that number, and the second and third fell short.

Good management requires that the cause of such losses be most diligently sought. Luck has nothing to do with the question. The breeder must closely examine his coops, for the cause exists there. Without the inspection of any given coop thus afflicted it is not possible to point out the exact cause of the trouble, but the writer confidently believes that in nine out of every ten cases the losses can be traced to one of the following causes, or a combination of them: (1) A fighting cock bird; (2) birds not mated; (3) lack of vitality in the breeding stock; (4) the presence of mice in the breeding quarters.

A fighting cock bird.—A cock with a pugnacious disposition will sometimes cause a great deal of trouble. He will get into fights with the birds in other nests, as a result of which the eggs and young squabs will be thrown out on the floor. Such a bird should be removed from the breeding quarters at once and for good.

Birds not mated.—Quite similar is the damage done by unmated birds in the breeding quarters, though not quite such radical treatment is required to remedy it.

Many breeders who see their birds but little during the day do not realize the extent of the damage unmated birds may cause. They see eggs and little squabs on the floor, but do not really know how they came there. The breeder who finds cold eggs or dead squabs on the floor should investigate at once. Not a single unmated bird should be permitted in the pens. Serious damage can be done in a few minutes by such a bird. The unmated cock will hunt for a mate and an unmated hen will attract the cock birds; in either case a fight results, and the scene of combat is as likely to be in a nest with eggs or small squabs as elsewhere, and they are unceremoniously tumbled to the floor.

Ignorance on the part of growers is in many cases the cause of the trouble. A mistake is always made in putting purchased birds in the permanent breeding pens until they have become accustomed to the new surroundings and resume their matings.

Homers are not always prompt to begin housekeeping when moved

to a distance from their old home. Sometimes they appear to be attacked by a sort of homesickness. One thing is certain, they must not be put into the breeding pens with the others until they remate.

Young birds are unmated birds, and must be rigidly excluded from the breeding quarters.

Lack of vitality.—The two principal causes of lack of vitality are inbreeding and lice. Careless breeders who keep no records of the progeny of each pair of birds, but permit all to grow together and mate in haphazard fashion are paving the way to disaster. After a very few generations the birds lack stamina and appear listless, are careless about sitting on the eggs, and only half feed the squabs. In many cases the unhatched bird lacks strength to break its way out of the shell and dies there, or, if hatched, lingers a week or two and dies. Such results are sure to follow continued inbreeding. These evils can be avoided only by keeping a record of nest mates and not permitting them to pair with each other.

When lice become numerous they prey upon the birds, suck their blood, and exhaust their strength. When a nest becomes badly infested it is not surprising that a bird forsakes it and perches elsewhere, hoping thereby to escape its enemies.

Presence of mice.—The experience of breeders during the winter of 1903-4 has brought out some startling facts concerning infestation of pigeon pens by mice. One breeder with 300 pairs killed 150 mice in one day. Another with 500 pairs caught 246 mice in January. Still another "knew he hadn't a single mouse in his pens," but, because he had chilled eggs and dead squabs, concluded to clean out his houses. As he took down the top nest 15 mice ran out; the next one produced 13, and the third a dozen. The man was astonished. But he continued the work until he had completely freed his premises of mice. He had not been selling squabs enough to pay his feed bills, but in a few weeks his weekly receipts showed a nice margin above expenses.

Because a few nests in which mice harbor may now and then contain nice plump squabs is no excuse for tolerating the presence of these pests, as they certainly do much damage.

The foregoing are the principal causes of losses in chilled eggs and dead squabs. When a breeder is suffering from such losses he should without delay endeavor to discover and remove the cause.

SUGGESTIONS REGARDING THE PURCHASE OF BREEDING STOCK.

Careless buying.—The purchase of breeding stock is necessarily the first step to be taken by the prospective squab raiser. It is just here that many beginners make serious mistakes, which result in losses and

discouragement, and often cause them to abandon the business in disgust. The beginner, for instance, buys birds without examining them carefully; he asks few if any questions of the seller, and requires no written guaranty. As a result he finds that he has his pens filled with birds which lack some if not all of the necessary qualifications of good breeders. He has invested money in buildings, he has put more in birds, and now he has feed bills to meet regularly; but he has few squabs to sell, and no prospects for better results later on. Troubles of this kind arise from what may be characterized as careless buying.

Kind of birds to buy.—The general rule which should be followed by everyone who proposes to engage in squab raising for profit is as follows: Find out what kind of birds are needed, and do not buy until you find such birds. For profitable squab raising, birds should be (1) of the best variety, (2) of suitable age, (3) vigorous and prolific, (4) free from disease and lice, (5) good feeders of young, and (6) mated birds.

The reasons why Homers are to be preferred for squab raising have already been given, and a beginner should insist on getting birds of this variety.

As a rule pigeons may be bred continuously with profit until they are 6 or 7 years old, and many birds have been bred till they are much older, but a flock averaging 6 or 7 years will hardly prove profitable. Perhaps if breeders would separate the sexes during the moulting season and keep them apart for two months, as is the custom with breeders of fancy stock, the profitable period might be prolonged. However this may be, one thing is evident: The younger the birds are, the more service they will give the breeder. It is advisable, therefore, to purchase birds not more than 2 years old. Buying banded youngsters with a list of nest mates when they are only 8 weeks old, and mating them, is also a good plan to pursue.

Unless a bird is vigorous and capable of producing vigorous and healthy offspring, it is of no use; and, though ever so vigorous, if not prolific its purchase will not prove a good investment.

Many beginners have bought birds without asking any questions, and repented in the presence of canker and lice. A thorough examination should be made for evidence of disease and insect parasites.

Unless a pair of birds take good care of their young and feed them, so that they become fat, plump squabs, weighing 8 pounds to the dozen at 4 weeks old, they are not profitable. Unless a Homer squab is fit for market when it gets on the floor, it never will be, for the old birds do not give the "traveler" as much attention, and the exercise it takes reduces its flesh.

The securing of mated birds is the most important point requiring the attention of the buyer. It is in this connection that the most mis-

takes and the most serious ones are made. There is more complaint among purchasers who have bought birds represented to be mated and found that they were not than from any other source. There seems to be a difference of opinion as to what constitutes mated birds. Some dealers declare that mated birds consist of an equal number of each sex, and so they try to furnish a given number of cocks and hens. When they guess right, they give an equal number, but in very many instances the guess is wild. Experienced pigeon breeders find it difficult to distinguish the sexes, and make many mistakes. There is but one way to tell when birds are mated, and that is when they have gone to housekeeping and produced eggs.

How to buy.—The object of the buyer, as already suggested, is to secure birds with all the qualifications enumerated above. In buying he should make it a rule to ask questions covering every point. He should endeavor to find out how much the seller knows about the birds, and what he means the term by “mated birds.” A dealer will often buy birds in different parts of the country and have them shipped to him. Sometimes he will buy of another dealer. Hence it often happens that the dealer knows very little about the birds. The buyer of such birds necessarily has to assume the risks of getting birds that lack vitality, are too old, or are unmated. For breeding stock bought under such circumstances the price should be correspondingly low. The prospective squab raiser who *buys* mated birds should *get* mated birds, or he should not be required to pay the price for them. The grower or dealer who sells birds which he represents to be mated, should be required to give a written guaranty to that effect.

The honest grower or dealer can not, of course, give any accurate information which he does not possess. The importance of keeping records can now be seen. If the squabs intended for breeding stock have been properly banded, and a record has been carefully kept (see page —), a transcript of this can be furnished. If the breeder has a definite plan or system, including the keeping of records, he will be able to give a correct answer to every inquiry regarding the breeding stock which he is offering for sale.

In some cases where beginners have made serious mistakes in the purchase of breeding birds, the only advice which can be given is to get rid of them all and begin anew.

To the beginner who has not yet purchased his breeding stock, the best advice that can be given is: If you can not get full and satisfactory information concerning the birds which may be offered for sale, together with a written guaranty that they are mated, do not buy. A beginner will have much to learn, even when he starts with good Homer stock, healthy, vigorous, and mated, ready to begin producing. The breeder has got to pay feed bills whether his birds produce squabs or not, and he must continue paying them as long as he keeps the birds.

SUMMARY.

It will pay to go into the pigeon business for squabs only provided one gets the right kind of stock and gives careful attention and proper management.

The best breed to use for squab raising is straight Homers or a cross between them and Dragoons. Successful breeders use Homers almost exclusively, because they are the best workers and feeders and raise larger squabs in four weeks' time than any other variety. By a cross of straight Homers with Dragoons you get a larger squab in four weeks' time than with straight Dragoons. A pair of straight Dragoons requires five weeks to bring squabs to market size, but the cross will result in a larger squab which can be put on the market in a little over four weeks.

One large pigeon house is better and more economical than several small ones, but in no case should a house be built to accommodate more than 250 pairs. If larger numbers are to be kept, more than one house should be built. A room 8 by 10 feet will accommodate 50 pairs very comfortably. The fly should be extended 32 feet if possible.

Pigeons should be fed twice a day—in the summer time at 6.30 a. m. and 4.30 p. m., in the winter at 7.30 a. m. and 3 p. m.

The best kinds of feed to use are cracked corn, red wheat, Kafir corn, millet, peas, hemp, and rice. In the morning give wheat, cracked corn, and peas in equal parts; in the afternoon give equal parts of cracked corn, peas, Kafir corn, and millet. The birds should be fed in the pen rather than in the fly.

Water the birds every morning before feeding, using nothing except fresh pure water. Always clean out the fountain before filling.

Bathing is very essential to the health of pigeons. In summer they should have an opportunity to bathe at least every other day. In winter the bath should be given only on bright, sunny days. It is essential to clean house once every week. After cleaning the nests, put powdered carbolated lime in all cracks, corners, and damp places. Sprinkle the floor with lime and sprinkle a bucket of sand evenly over the lime.

The author's 425 pairs of pigeons produced in one year 4,400 squabs for market. Anyone with good stock and giving as good care and feed ought to do as well.

Common causes of chilled eggs and dead squabs are fighting cocks, unmated birds, mice in the breeding quarters, and lack of vitality in the breeding stock.

In the purchase of breeding stock, the buyer should endeavor to secure young, vigorous, mated birds, free from disease and lice. He should secure all available information about the birds offered, and, if possible, a written guaranty.

FARMERS' BULLETINS.

The following is a list of the Farmers' Bulletins available for distribution, showing the number and title of each. Copies will be sent free to any address in the United States on application to a Senator, Representative, or Delegate in Congress, or to the Secretary of Agriculture, Washington, D. C. Numbers omitted have been discontinued, being superseded by later bulletins.

No. 16. Leguminous Plants. No. 22. The Feeding of Farm Animals. No. 24. Hog Cholera and Swine Plague. No. 25. Peanuts: Culture and Uses. No. 27. Flax for Seed and Fiber. No. 28. Weeds: And How to Kill Them. No. 29. Souring and Other Changes in Milk. No. 30. Grape Diseases on the Pacific Coast. No. 31. Alfalfa, or Lucern. No. 32. Silos and Silage. No. 33. Peach Growing for Market. No. 34. Meats: Composition and Cooking. No. 35. Potato Culture. No. 36. Cotton Seed and Its Products. No. 37. Kafir Corn: Culture and Uses. No. 38. Spraying for Fruit Diseases. No. 39. Onion Culture. No. 41. Fowls: Care and Feeding. No. 42. Facts About Milk. No. 43. Sewage Disposal on the Farm. No. 44. Commercial Fertilizers. No. 45. Insects Injurious to Stored Grain. No. 46. Irrigation in Humid Climates. No. 47. Insects Affecting the Cotton Plant. No. 48. The Manuring of Cotton. No. 49. Sheep Feeding. No. 50. Sorghum as a Forage Crop. No. 51. Standard Varieties of Chickens. No. 52. The Sugar Beet. No. 53. How to Grow Mushrooms. No. 54. Some Common Birds. No. 55. The Dairy Herd. No. 56. Experiment Station Work—I. No. 57. Butter Making on the Farm. No. 58. The Soy Bean as a Forage Crop. No. 59. Bee Keeping. No. 60. Methods of Curing Tobacco. No. 61. Asparagus Culture. No. 62. Marketing Farm Produce. No. 63. Care of Milk on the Farm. No. 64. Ducks and Geese. No. 65. Experiment Station Work—II. No. 66. Meadows and Pastures. No. 68. The Black Rot of the Cabbage. No. 69. Experiment Station Work—III. No. 70. Insect Enemies of the Grape. No. 71. Essentials in Beef Production. No. 72. Cattle Ranges of the Southwest. No. 73. Experiment Station Work—IV. No. 74. Milk as Food. No. 75. The Grain Smuts. No. 76. Tomato Growing. No. 77. The Liming of Soils. No. 78. Experiment Station Work—V. No. 79. Experiment Station Work—VI. No. 80. The Peach Twig-borer. No. 81. Corn Culture in the South. No. 82. The Culture of Tobacco. No. 83. Tobacco Soils. No. 84. Experiment Station Work—VII. No. 85. Fish as Food. 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